

IN THE CLAIMS

1-20 (Cancelled)

21. (Previously Presented) Network architecture for accelerating execution of a program having one or more algorithms, comprising:
a computer connected to a network;
a distributed cluster of nodes connected to the computer through the network;
a library, associated with each node, accepting requests to accelerate processing of the algorithms; and
a controller having protocol software to engage the nodes to process the algorithms and return a result to the computer, the controller and nodes having a priori knowledge of logical connections between the nodes to accelerate parallel processing of data therebetween, the controller and cluster being arranged as a Howard Cascade.

22. (Cancelled)

23. (Previously Presented) The network architecture of claim 21, the Howard Cascade ensuring data connections between nodes of the cluster are available when needed.

24. (Previously Presented) The network architecture of claim 21, the Howard Cascade balancing timing between nodes of the cluster to decrease serial operation and data collisions between the nodes.

25. (Previously Presented) The network architecture of claim 24, the nodes being balanced such that data transferred between nodes, over a time period, is of equal size, and wherein a cascade depth and a cascade width of the Howard Cascade are equal during parallel processing of the data.

26. (Previously Presented) The network architecture of claim 24, the nodes being balanced such that data transferred between nodes, over a time period, is of unequal size, corresponding to heterogeneous processing speed of the nodes.

27-32 (Cancelled)

33. (Currently Amended) A parallel processing system, comprising:
a home node;
a plurality of nodes, the home node and plurality of nodes ~~are being~~ arranged as a Howard Cascade, wherein the home node and the plurality of nodes having a priori knowledge of logical connections between the nodes to accelerate parallel processing of data there between; and
a switch operable to switch data connections between the nodes, the home node connected with the switch and operable to distribute algorithm of a program among the nodes for parallel processing, the home node selecting communication between the nodes based upon the algorithms and without the program having knowledge of the communication.

34. (Previously Presented) The system of claim 33, wherein a cascade depth and a cascade width of the Howard Cascade remain equal during parallel processing.

35. (Previously Presented) The system of claim 33, wherein internodal communication between the nodes comprises TCP/IP, or any other standard communication protocol.

36. (Previously Presented) The system of claim 33, wherein the nodes comprise homogeneous processing speed and are balanced such that data transferred between nodes, over a time period, is of equal size.

37. (Previously Presented) The system of claim 33, wherein the nodes comprise heterogeneous processing speed, wherein data transferred between nodes, over

a time period, is of unequal size, which to balance the total computation and communication time.

38. (Previously Presented) The system of claim 34, wherein the nodes process one or more threads during parallel processing of a program.

39. (Previously Presented) The system of claim 38, each of the threads having an identical set of functional capabilities.

40. (Previously Presented) The system of claim 38, the threads deriving from a plurality of jobs.

41. (Previously Presented) The system of claim 33, the nodes comprising heterogeneous computers.

42. (Previously Presented) The system of claim 33, the nodes comprising homogeneous computers.

43. (Previously Presented) The system of claim 33, wherein each node has a free data connection for internodal communication to avoid data collision.

44. (Previously Presented) The system of claim 33, wherein each of the nodes is operable to determine whether called nodes function properly.

45. (Previously Presented) The system of claim 44, wherein each of the nodes detects non-receipt of a message to determine malfunction of the lower-hierarchy called nodes.

46. (Previously Presented) The system of claim 33, the home node operable to distribute data and algorithms among the nodes such that as many nodes as possible are utilized and such that each of the nodes consumes the least number of threads.

47. (Previously Presented) The system of claim 33, the home node distributing data and functions among the nodes with predetermined cascade depth and width, to process a predetermined number of threads per node .

48. (Previously Presented) The system of claim 33, the nodes being arranged as a Howard Cascade, each node comprising a library of functions that are processed by the Howard Cascade.

49. (Previously Presented) The system of claim 48, the library comprising a Dynamic Link Library.

50. (Previously Presented) The system of claim 33, the home node distributing a program among the nodes such that data connections between nodes are available for use at a predetermined time.